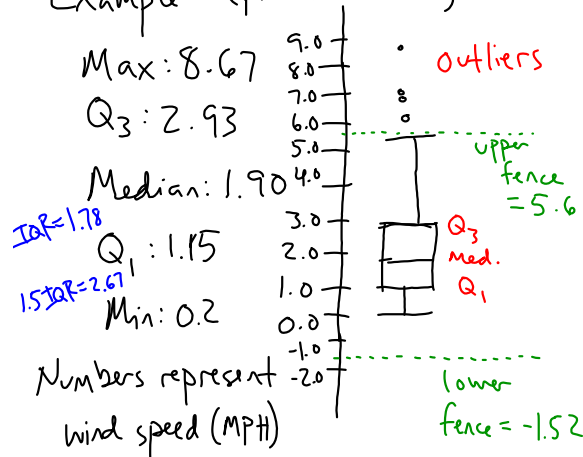


Boxplots:

- Another way to represent data
- Use 5 Number Summary to create boxplot

• Example: (p. 84 in book)



Steps:

1. Draw axis (either vertical or horizontal). Number axis spanning all data.

2. Draw lines at Q_1 , median, and Q_3 . Connect lines to form a box.

3. Construct "fences"

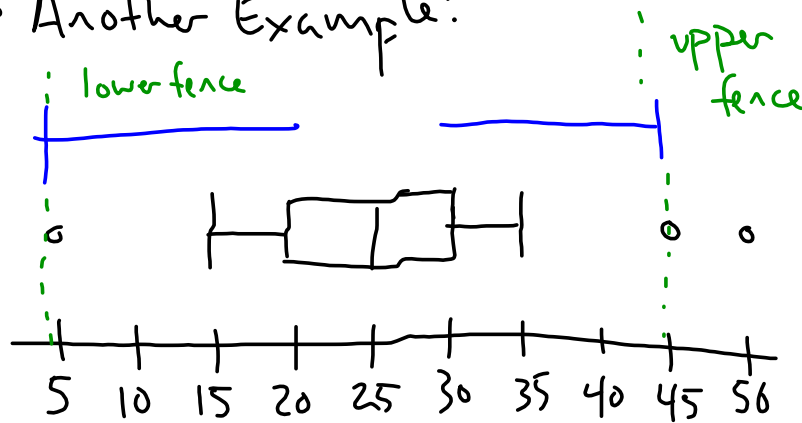
$$\text{Upper fence} = Q_3 + 1.5(IQR)$$

$$\text{Lower fence} = Q_1 - 1.5(IQR)$$

- Point of the fences is to set a boundary for the data. Data outside fences are outliers.
- Fences get erased before the final boxplot is presented.

4. Draw "whiskers" of plot. These are the most extreme data points just inside the upper and lower fences.
5. Draw circles outside fence line to represent outliers.

- Another Example:



Max: 50 Median: 25

Min: 5 $Q_1: 20$

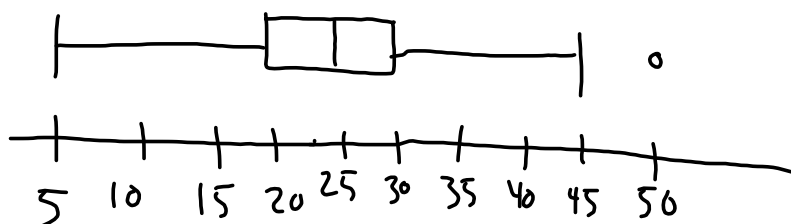
$Q_3: 30$

$$IQR = Q_3 - Q_1 = 10$$

$$\text{upper fence} = Q_3 + 1.5(IQR) = 45$$

$$\text{lower fence} = Q_1 - 1.5(IQR) = 5$$

- Whiskers extend all the way to the fences!
- Data points outside of fence line are outliers.



- Make Boxplot of "Average time it takes to get to school"

Max: 60 median: 20

Min: 7 $Q_1 = 15$

$Q_3 = 25$

$IQR = 10$

Upper fence = 40

Lower fence = 0

